

"G. H. B.") are essentially dedicated to the *effective research* of particular solutions of dynamical equations. Not a word is said of transformations, *mixed forms*, &c., and *ignorance of coordinates* is mentioned only in the preface, because this was Routh's point of view in defining and studying the stationary motions.

T. LEVI-CIVITA.

University of Padua, August 29.

I do not recollect by whom the phrases "ignorance of coordinates" and "ignored coordinates" were originally introduced, but on consideration I am of opinion that they are singularly inappropriate ones, and I much prefer the phrase "kinosthenic coordinates."

The advantages of the mixed transformation are that, whenever a generalised momentum is known to be constant the motion can be determined without knowing anything about the coordinate or the velocity corresponding to this momentum. The first trace I can find of this idea is contained in a paper published by Lord Kelvin about 1872 (see "Hydrodynamics," vol. i., p. 177).

The discovery of the mixed transformation was the result of certain hydrodynamical investigations relating to cyclic irrotational motion, but the circumstance that I originally published it in a hydrodynamical form may have obscured the character of the result as a general theorem of dynamics.

A. B. BASSET.

September 4.

The alleged Triassic Foraminifera of Chellaston, near Derby.

IN NATURE for July 26, in a notice of Mr. Fox-Strangways's memoir on the Loughborough district, reference is made to certain Foraminifera of Liassic type, at one time believed to come from the local Trias. Prof. Rupert Jones, F.R.S., has kindly directed my attention to his explanation of the matter in the "Foraminifera of the Crag," part ii., p. 161, published by the Palaeontographical Society in 1895. He there gives a history of the observations, including personal inquiries, and believes that the Foraminifera in question came from Liassic clay in Leicestershire, which was "inadvertently thrown in with the 'red clay' on its journey to Cubitt's works in London." Mr. Fox-Strangways gives a reference to this passage, but does not quote it, and suggests on his own part that the Foraminifera may have come from Liassic material in the drift.

GRENVILLE A. J. COLE.

White- and Brown-shelled Eggs.

BIRDS which lay their eggs in comparatively unprotected places and in a hollow in the ground, as is the case with the pheasant, partridge, jungle fowl, &c., always lay coloured eggs closely resembling in tint the colouring of their surroundings. White-shelled eggs are laid only by birds which make a good nest—those which make it in a secluded spot, or which take the precaution of covering their eggs with leaves, &c., when they are off the nest. It is a strange fact, therefore, that the non-sitting breeds of our domestic fowls lay white-shelled eggs, whereas in the eggs of the sitting or Asiatic breeds the protective colouring is retained in the shell of the egg. This loss of colour cannot be merely the result of centuries of domestication, or all breeds of domestic fowls would lay white-shelled eggs. The systematic repression of the maternal instincts of the hen carried on by man for a number of years has certainly produced the white-shelled egg. It would almost appear to be the case that the hen, knowing she will have nothing to do with the hatching and rearing of the chicken in the egg, loses all interest in the egg, and leaves it, as it were, to its fate. For this reason she neglects in some mysterious way to impart to the shell the protective colouring which is so necessary, in a state of nature, for the preservation of her race. If this be really the case there is an insurmountable obstacle in the way of obtaining brown eggs from the non-sitting breeds of domestic hens, and poultry keepers are only wasting time in trying to accomplish the impossible.

L. M. F.

FLASHLIGHT PHOTOGRAPHS OF WILD ANIMALS.

FROM the popularity of his well-known work "Mit Blitzlicht und Büchse" (or its English translation, "With Flashlight and Rifle"), there is, we believe, a very general impression that Mr. C. G. Schillings was the pioneer in the practice of photographing big game animals by night in their native haunts by combining the use of the flashlight with the camera. It appears, however, from a most interesting and profusely illustrated article in the July number of the *National Geographic Magazine* that the true claimant to this position is an American,



FIG. 1.—A White-tailed Deer watching a light on bushes in the distance.
From the *National Geographic Magazine*.

sportsman, the Hon. George Shiras. With regard to his position in the matter of flashlight-photography, Mr. Shiras writes as follows:

"While a number of the present illustrations were taken in the daytime, this method of photography is now so well known that I will not attempt to describe such pictures in detail; but in view of the fact that I was the first to attempt flashlight pictures of wild game, and for the first fifteen years was the sole occupant of this attractive field of photography, it may be of interest to the readers of this article to learn something about this rather odd way of picturing wild animals."

One of the author's most successful plans in the forests of North America was to mount his apparatus in the bow of a boat manned by a selected crew, and then to set forth in search of his quarry. Describing the photographing of a deer the presence of which has been made known by the light reflected by his eyes, the author writes that "The flashlight-apparatus has been raised well above any obstructions in the front of the boat, the powder lies in the pan ready to ignite at the pull of a trigger; everything is in readiness for immediate action. Closer comes the boat, and still the blue translucent eyes watch it. . . .

its own portrait, and here again we may quote the author's own phraseology:—

"A string is passed across a runway or other point where the deer are likely to pass, which, when touched, sets off the trigger and ignites the magnesium powder. The same method can be used for laylight pictures, except that here a slender black thread is laid across the path, one end of which is attached to the shutter of the camera. The shutter revolves as soon as there is any pressure upon the thread, and a picture of any passing object is taken instantaneously.

Not the least interesting part of this species of photography is that the operator does not know until he develops his plates what manner of beast, bird, or reptile has caused the shutter to open."

Although many of the portraits thus obtained are not in every detail satisfactory to the naturalist, yet they frequently reveal the animal in characteristic and unsuspected attitudes, or display peculiar alarm-features, such as the expansion of the hairs of the light rump-patch of the wapiti revealed in one of the author's pictures. Such pictures are indeed especially valuable in the case of many of the smaller mammals, the nocturnal habits of which make it so difficult to become acquainted with their mode of life.

Whether photography—flashlight or otherwise—will, as the author and Sir Harry Johnston (in the introduction to the English edition of Mr. Schillings's book) hope, ever induce sportsmen to be satisfied with pictures instead of the lives of their quarry remains to be seen.

R. L.



FIG. 2.—A Raccoon taking his own portrait. From the *National Geographic Magazine*.

Suddenly there is a click, and a white wave of light breaks out from the bow of the boat—deer, hills, trees, everything stands out for a moment in the white glare of noonday. A dull report, and then a veil of inky darkness descends. Just a twenty-fifth of a second has elapsed, but it has been long enough to trace the picture of the deer on the plates of the cameras, and long enough to blind for the moment the eyes of both deer and men. Some place out in the darkness the deer makes a mighty leap; . . . and soon he is heard running, as only a frightened deer can."

A variation of the plan is to let the creature take

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only 130 to 160 feet above the surrounding plain. When climbed, it is found to contain a crater 530 to 560 feet deep, the dry bottom being thus 400 feet below the level of the land surrounding the rim. The crater is almost exactly circular, and is nearly three-quarters of a mile across, two diameters at right-angles with each other measuring 3654 and 3808 feet respectively. From the crest of the rim to a distance of about three and a half miles outwards the surface of the country is strewn with fragments of sandstone of various colours; for the first half-mile the fragments are large blocks, some of them of enormous size, 60 or even 100 feet in

A SEARCH FOR A BURIED METEORITE.

THE mode of origin of a remarkable terrestrial feature, known as Coon Butte or Coon Mountain, has been the subject of much speculation and study, of which an account was given in the year 1895 to the Geological Society of Washington by Mr. Grove Karl Gilbert, of the United States Geological Survey, in a presidential address entitled "The Origin of Hypotheses."

This so-called mountain, situated in Central Arizona, rises